13.0 Site Inspection

The site was visited on May 2, 2005, by Ching-Pi Wang and Sarah Good of the Washington Department of Ecology. Both the landfill cover and fence were in good repair and all systems appeared to be functioning normally. Conversations with Min Soon Yim, the Midway Landfill Closure Site Supervisor, and Jeff Neuner, the Midway Landfill Closure Program Manager of the City of Seattle, indicate landfill operations have been routine.

14.0 Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

- The remedy has greatly reduced impacts, but it has not brought the landfill into compliance with respect to 1,2-dichloroethane and vinyl chloride in one upgradient well and four downgradient wells. Manganese exceeds the cleanup level in one downgradient well. The sources of these contaminants are the waste placed in the landfill and upgradient off site.

- Fluid levels in most of the SG/SR wells have continued to substantially decline over the past five years, demonstrating the continuing effectiveness of engineering controls.

- Concentrations of Record of Decision (ROD) contaminants of concern (COCs) in the SGA have generally remained stable or decreased over the past five years, although levels of some COCs remain above cleanup levels (1,2-dichloroethane and vinyl chloride in one upgradient well and four downgradient wells and manganese in one downgradient well).

- The SGA does not serve as a current source of drinking water and institutional controls prohibit future drinking water uses. Therefore, despite the existing levels of contaminants, the remedy continues to be protective of human health and the environment.

- Upgradient sources of VOCs in groundwater continue to be present and will limit the potential for the COCs in the SGA to decrease below the ROD cleanup levels. Vinyl chloride is a daughter product of the ethenes and ethanes detected in upgradient wells, and both vinyl chloride and 1,2-dichloroethane are also present upgradient of the landfill.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

The exposure assumptions, toxicity data, and remedial action objectives used at the time of the remedy selection are still valid. The cleanup levels established for the site in the ROD are still appropriate and protective considering the current and likely future use of the site. There have been no regulatory or statutory changes that would call into question the protectiveness of the remedy.

The clean up levels selected in the ROD are also still valid. However, because of changes to the Model Toxics Control Act (MTCA) regulations, the vinyl chloride cleanup level is updated to reflect revisions to the state cleanup levels. The cleanup level for vinyl chloride was establish at the state MTCA level of 0.02 µg/L instead of the federal maximum contaminant level of 2 µg/L. The Record of Decision specified the state cleanup standard of 0.02 µg/L with the caveat that the practical quantification limit of 0.2 µg/L would be used as an alternative because the cleanup level was lower than the practical quantification limit.

Revisions to the MTCA implemented in 2001, changed the requirements for developing ground water cleanup standards (Washington State Department of Ecology, 2001a, b; respectively). The MTCA regulations require adjustment of concentrations based on applicable state and federal law to the $1E^{-5}$ risk level.

The revised state cleanup level for vinyl chloride is 0.29 µg/L, using the MTCA adjusted cancer risk of $1E^{-5}$.

With the change of the vinyl chloride state cleanup standard from 0.02 to 0.29 µg/L, the use of the practical quantification limit of 0.2 µg/L as an alternative cleanup is no longer relevant.

The revisions to the vinyl chloride cleanup standard as described above are agreed upon by the City of Seattle and the Washington Department of Ecology. The City of Seattle will issue a revision to Midway Landfill Monitoring Plan (Parametrix 2000a) to document the history of changes to the cleanup standards for vinyl chloride. The new vinyl chloride standard will be utilized in future evaluations of ground-water conditions at the Midway Landfill.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The presence of low concentrations of 1,2-dichloroethane and vinyl chloride in one upgradient and four downgradient wells in the Southern Gravel Aquifer is of concern. In addition, other volatile organic compounds have also been detected upgradient of the landfill. The Washington Department of Ecology will be contacting the owners of properties in the vicinity of the upgradient sources to encourage the property owners to voluntarily investigate and cleanup any contamination that may affect the landfill.

At the request of the US EPA, 1, 4 dioxane testing, will be conducted during the next sampling event at upgradient monitoring wells 17B and 21B in the Sand Aquifer and a third well, MW-14, a downgradient well in the Southern Gravel Aquifer. Well 21B has shown a slight, but steady increase over time of volatile organic compounds. Well 17B has shown a decrease in concentration over time for volatile organic compounds. This is a precautionary step advised by the US EPA for all sites undergoing 5-year periodic review.

The Washington Department of Transportation, in cooperation with the City of Seattle and the Washington Department of Ecology will be expanding Interstate 5 into the highway right-of-way on the eastern side of the landfill. Investigations of the refuse in the right-of-way show that this expansion will not adversely affect the landfill. Gas probes in this portion of the landfill have been devoid of any gases for the past several years. These gas probes will be abandoned prior to expansion of the interstate.

15.0 Issues

The presence of low concentrations of 1,2-dichloroethane and vinyl chloride in one upgradient and four downgradient wells in the Southern Gravel Aquifer is of concern. The Washington Department of Ecology will be contacting the owners of properties in the vicinity of the upgradient sources to encourage the property owners to voluntarily investigate and cleanup any contamination that may affect the landfill.

16.0 Recommendations

The City of Seattle will to continue to operate and maintain remedial systems, including access controls, constructed under the consent decree. In addition, the monitoring programs will need to continue in compliance with the approved monitoring plan. This includes continuing the fluid elevation monitoring program, groundwater chemistry monitoring program, and landfill gas monitoring program in accordance with the Monitoring Plan, and evaluate the results on an ongoing basis.

Specific recommendations and follow-up actions include the following:

- Annually assess the results of the ongoing monitoring program to determine if additional work is needed.
- During the next scheduled ground-water sampling round, test for 1,4, dioxane at monitoring wells 14B, 17B and 21B. If 1,4-dioxane is not detected, and then discontinue testing for this compound. If detected, however, the monitoring program will be adjusted to monitor the trend of this compound.
- Reassess the scope of monitoring on a 5-year interval depending on monitoring results.
- Change the cleanup level for vinyl chloride from 0.2 µg/L to 0.29 µg/L.

- Investigate and cleanup upgradient sources of VOC contamination. Encourage upgradient property owners to voluntarily cleanup contamination. Ecology will send letters to the property owners in the upgradient area to alert them to the groundwater contamination

problem and to encourage them to voluntarily investigate sources and cleanup the contamination. September 2006 is the planned milestone date for notification and consultation with the property owners. September 2007 or 2008 is the target milestone date for substantive action on the upgradient source areas.

The recommendations and follow-up actions are summarized in Table 3.

Table 3: List of Recommendations and Follow-up Actions

Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date
Annual notice of groundwater contamination is sent to local licensed well drillers.	City of Seattle	Ecology	7/06/05
Assess the results of the ongoing monitoring program to determine if additional work is needed.	City of Seattle	Ecology	annual
Reassess the scope of monitoring on a 5-year interval depending on monitoring results.	City of Seattle	Ecology	annual
Change the cleanup level for vinyl chloride from 0.02 µg/L to 0.29 µg/L.	Ecology	EPA	October 2005
Test monitoring wells 14b, 17B and 21B to ensure 1,4 dioxane is not present	City of Seattle	Ecology	November 2005
Investigate and cleanup upgradient sources of VOC contamination. Encourage upgradient property owners to voluntarily cleanup contamination.	Ecology	Ecology	2010
Ecology will notify property owners by September 2006. Ecology will advise the property owners on cleanup requirements. September 2007 or 2008 is the planned time period for property owners to take substantive action on the upgradient source.	Ecology	Ecology	September 2006, 2007, 2008